



## Complete Summary

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### **GUIDELINE TITLE**

Level of renal function at which to initiate dialysis.

### **BIBLIOGRAPHIC SOURCE(S)**

Level of renal function at which to initiate dialysis. Nephrology 2005 Oct;10(S4):S50-4.

Level of renal function at which to initiate dialysis. Westmead NSW (Australia): CARI - Caring for Australasians with Renal Impairment; 2005 Feb. 9 p. [14 references]

### **GUIDELINE STATUS**

This is the current release of the guideline.

## **COMPLETE SUMMARY CONTENT**

SCOPE  
METHODOLOGY - including Rating Scheme and Cost Analysis  
RECOMMENDATIONS  
EVIDENCE SUPPORTING THE RECOMMENDATIONS  
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS  
IMPLEMENTATION OF THE GUIDELINE  
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT  
CATEGORIES  
IDENTIFYING INFORMATION AND AVAILABILITY

## **SCOPE**

### **DISEASE/CONDITION(S)**

- End-stage kidney disease
- Dialysis

### **GUIDELINE CATEGORY**

Management  
Treatment

### **CLINICAL SPECIALTY**

Family Practice  
Internal Medicine

Nephrology  
Pediatrics

## **INTENDED USERS**

Physicians

## **GUIDELINE OBJECTIVE(S)**

To examine evidence regarding the level of renal function at which maintenance dialysis should be commenced in patients with end-stage kidney disease

## **TARGET POPULATION**

Adults and children with end-stage kidney disease

## **INTERVENTIONS AND PRACTICES CONSIDERED**

1. Dialysis (considered but not recommended)
  - Early-dialysis initiation (considered but not recommended)
2. Glomerular filtration rate monitoring (considered but not recommended)

## **MAJOR OUTCOMES CONSIDERED**

- Renal function
  - Glomerular filtration rate
  - Urea clearance
- Morbidity
- Mortality

## **METHODOLOGY**

### **METHODS USED TO COLLECT/SELECT EVIDENCE**

Searches of Electronic Databases

### **DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE**

**Databases searched:** Medline (1966 to April Week 2 2004). MeSH terms and text words for kidney disease were combined with MeSH terms and text words for renal replacement therapy and time factors. The results were then combined with the Cochrane sensitive search strategy for cohort and other prognostic studies.

**Date of search:** 28 April 2004.

### **NUMBER OF SOURCE DOCUMENTS**

Not stated

## **METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE**

Weighting According to a Rating Scheme (Scheme Given)

### **RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE**

#### **Levels of Evidence**

**Level I:** Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

**Level II:** Evidence obtained from at least one properly designed RCT

**Level III:** Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with historical control, two or more single arm studies, interrupted time series without a parallel control group

**Level IV:** Evidence obtained from case series, either post-test or pretest/post-test

### **METHODS USED TO ANALYZE THE EVIDENCE**

Systematic Review with Evidence Tables

### **DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE**

Not stated

### **METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Expert Consensus

### **DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Not stated

### **RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS**

Not applicable

### **COST ANALYSIS**

A formal cost analysis was not performed and published cost analyses were not reviewed.

## METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups  
Peer Review

## DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Recommendations of Others. Recommendations regarding level of renal function at which to initiate dialysis from the following groups were discussed: Kidney Disease Outcomes Quality Initiative, British Renal Association, Canadian Society of Nephrology, and European Best Practice Guidelines.

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

Definitions for the levels of evidence (I–IV) can be found at the end of the "Major Recommendations" field.

#### Guidelines

No recommendations possible based on Level I or II evidence

#### Suggestions for Clinical Care

(Suggestions are based on Level III and IV evidence)

- Commence dialysis when glomerular filtration rate (GFR) falls below approximately 10 mL/min/1.73 m<sup>2</sup> if there is evidence of uraemia or its complications such as malnutrition. In occasional patients it may be necessary to initiate dialysis at a higher GFR. (Level III evidence).
- If there is no evidence of uraemia or its complications, including malnutrition, commence dialysis when GFR falls below approximately 6 mL/min/1.73 m<sup>2</sup>. (Level III evidence).
- To encourage informed decision making, educate patients and staff about the strength of the evidence (at best, cohort studies) regarding the rationale for 'early' dialysis initiation.
- Monitor GFR quarterly from value of 15–20 mL/min/1.73 m<sup>2</sup> and monthly from < 10 mL/min/1.73 m<sup>2</sup> to avoid unintentional delay in initiation of dialysis.

With regards to measurement of renal function:

- GFR calculated as the mean of urea and creatinine clearance can be corrected for body surface area (BSA) by multiplying the uncorrected GFR by 1.73/BSA.
- BSA can be determined from the table in Appendix A of the original guideline document, derived from the formula of Du Bois,  $BSA = 0.007184 \times [\text{Height (cm)}]^{0.725} \times [\text{Weight (kg)}]^{0.425}$ .

- Do not rely solely on creatinine clearance to determine the need for initiating dialysis, because of wide variations due to extrarenal creatinine clearance and renal creatinine secretion.
- Target urea clearance can be calculated from the formula:  $C_{\text{urea}} (\text{L/wk}) = 2.0 (\text{target weekly Kt/V}) \times \text{Weight (kg)} \times 0.58$  V is calculated as  $(\text{Weight (kg)} \times 0.58)$  in this equation. It can be more accurately determined from the table in Appendix B of the original guideline document, derived from the formulae of Watson et al.:
  - For males  $V = 2.477 + [0.3362 \times \text{Weight (kg)}] + [0.1074 \times \text{Height (cm)}] - [0.09516 \times \text{age}]$
  - For females  $V = -2.097 + [0.2466 \times \text{Weight (kg)}] + [0.1069 \times \text{Height (cm)}]$
  - For children V can be calculated using the Mellits-Cheek method.\*

\*See also "Use of estimated GFR to assess level of kidney function" in Caring for Australasians with Renal Impairment (CARI) Evaluation of Renal Function guideline.

### **Definitions:**

### **Levels of Evidence**

**Level I:** Evidence obtained from a systematic review of all relevant randomized controlled trials (RCTs)

**Level II:** Evidence obtained from at least one properly designed RCT

**Level III:** Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method); comparative studies with concurrent controls and allocation not randomized, cohort studies, case-control studies, interrupted time series with a control group; comparative studies with historical control, two or more single arm studies, interrupted time series without a parallel control group

**Level IV:** Evidence obtained from case series, either post-test or pretest/post-test

### **CLINICAL ALGORITHM(S)**

None provided

## **EVIDENCE SUPPORTING THE RECOMMENDATIONS**

### **TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS**

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

## **BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS**

### **POTENTIAL BENEFITS**

Appropriate timing of initiation of dialysis in patients with end stage kidney disease

### **POTENTIAL HARMS**

Not stated

## **IMPLEMENTATION OF THE GUIDELINE**

### **DESCRIPTION OF IMPLEMENTATION STRATEGY**

An implementation strategy was not provided.

## **INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES**

### **IOM CARE NEED**

Living with Illness

### **IOM DOMAIN**

Effectiveness

## **IDENTIFYING INFORMATION AND AVAILABILITY**

### **BIBLIOGRAPHIC SOURCE(S)**

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### **ADAPTATION**

Not applicable: The guideline was not adapted from another source.

### **DATE RELEASED**

2005 Oct

### **GUIDELINE DEVELOPER(S)**

Caring for Australasians with Renal Impairment - Disease Specific Society

## **SOURCE(S) OF FUNDING**

Industry-sponsored funding administered through Kidney Health Australia

## **GUIDELINE COMMITTEE**

Not stated

## **COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE**

Not stated

## **FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST**

All guideline writers are required to fill out a declaration of conflict of interest.

## **GUIDELINE STATUS**

This is the current release of the guideline.

## **GUIDELINE AVAILABILITY**

Electronic copies: Available in Portable Document Format (PDF) from the [Caring for Australasians with Renal Impairment Web site](#).

Print copies: Available from Caring for Australasians with Renal Impairment, Locked Bag 4001, Centre for Kidney Research, Westmead NSW, Australia 2145

## **AVAILABILITY OF COMPANION DOCUMENTS**

The following is available:

- The CARI guidelines. A guide for writers. Caring for Australasians with Renal Impairment. 2009 Aug. 6 p.

Electronic copies: Available from the [Caring for Australasians with Renal Impairment \(CARI\) Web site](#).

## **PATIENT RESOURCES**

None available

## **NGC STATUS**

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